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Height structure of annual variations in circulation of the midlatitude lower thermosphere

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Abstract

Using long-term radio meteoric observations of wind at Kazan (52°N, 49°E) from 1978 to 1988, the height-seasonal structure and climatic characteristics are obtained, and the year by year variability is estimated for the zonal and meridional prevailing circulations in the altitudinal range of 80-110 km. The global character of the stratomesospheric winter cyclone invasion of altitudes of 80-100 km and the summer anticyclone penetration up to altitudes of ~ 90 km is ascertained, and the change from mesospheric to thermospheric regime of circulation at altitudes of 90-95 km is revealed. The height dependence of the parameters of annual variations of the prevailing motions with characteristic yearly and half-yearly periodicities are determined, and altitudinal profiles of the amplitude and phase of the quasi-biennial oscillations of the zonal and meridional circulations are estimated.